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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/530,756

11/10/2005

Hiroya Kobayashi

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EXAMINER

KUSUMAKAR, KAREN M

ART UNIT

PAPER NUMBER

2829

MAIL DATE

DELIVERY MODE

10/06/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|---------------------------------------|---|--|
| Office Action Summary | Application No. 10/530,756 | Applicant(s) KOBAYASHI ET AL. | |
| | Examiner KAREN M. KUSUMAKAR | Art Unit 2829 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/10/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-6 and 8-11 is/are allowed.
- 6) ☒ Claim(s) 1 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. As of the amendment filed 6/10/08, no claims have been added or canceled and claims 1, 2, 4-9, and 11 have been amended. Therefore, claims 1-11 are pending, with claims 1, 2, 7, and 9 being independent.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended these claims to have a depressed portion but it is unclear with respect to what the front surface is depressed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by **Takumi** (JP 05-047972 cited by the Applicant; the rejection is based on the machine English-translation of JP 05-047972, which was attached to the previous Office Action).

As to claims 1 and 7, Takumi teaches a photodetection device ([0002], line 2, Drawing 2) comprising: a semiconductor substrate (substrate 1, Drawing 2) having a back surface which serves as a light-incident surface ([0002], lines 5-8; 2nd principle surface 3, Drawing 2), and a front surface which opposes said back surface ([0002], lines 5-8; 1st principal surface 2, Drawing 2) and is provided with a charge reading part constituted by a charge-coupled device that detects light propagating from the back surface ([0002], lines 8-9; [0004], lines 1-10; [0010], lines 3-5; active components 21 as in Drawings 1 or 4), said front surface having a depressed portion in a region of said front surface that corresponds to the region of said back surface at which said charge-coupled device is disposed (The substrate is depressed with respect to wirings 4 shown in figure 4, the front and the back surface correspond to each other as a matter of fabrication); a cooling device cooling the charge reading part ([0002], lines 13-14; buffer material 8 as shown in Drawings 1-4), the cooling device having a cooling surface which has a size that is larger than the region at which the charge reading part is disposed (principle surface 19 and active components 21, respectively, Drawing 4a) and yet smaller than the entirety of the front surface of the semiconductor substrate (1st principal surface 2, Drawing 4a), and which contacts the front surface of said semiconductor substrate while covering the entirety of the charge reading part

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(Drawing 4b); a package having a cavity which houses both the semiconductor substrate and the cooling device (4, external lead 6, glass tube 9, metallic wiring 10, 11 and 13 together form the package, Drawing 2), and being provided with package terminals electrically communicating between the cavity and the exterior thereof (internal metal lead 5 and electrode 12; Drawing 2); electrode pads provided on the front surface of the semiconductor substrate and positioned at the peripheral of the region covered by the cooling surface (it is inherent that the 1st principal surface 2 has electrodes, such as metals or conductive layers, in order for the substrate 1 and the active components 21 to transmit electrical signal to the package formed by 4, external lead 6, glass tube 9, metallic wiring 10, 11 and 13 via 7, Drawing 2); and bonding wires electrically connecting the package terminals and the electrode pads (7, Drawings 1-4).

Allowable Subject Matter

Claims 2-6 and 8-11 are allowed. The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the claims listed above in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.

The prior art fails to teach a combination of all of the features in claims 2 and 9. In particular, the prior fails to teach a working opening is provided at the cavity bottom part of the package that corresponds to the electrode pads and the package terminals. As Applicant noted on pages 15-16, last and first paragraph, respectively, the package

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is a vacuum-sealed glass tube and making a working opening would destroy the reference.

Miramatsu (US 6,872,992) teaches a variably thick substrate having a light-incident back surface and a front surface a charge-coupled device that detects light propagating from the back surface (Fig. 4); a cooling device and wiring bonds.

Miramatsu does not teach packaging that includes working openings. While packaging devices and making working holes is known in the art, there would be no motivation to do so because it would require drilling or etching through resin layer 27 and the device would not function as designed.

Claims 3-6, 8, 10, and 11 are allowed because they depend from claims 2 and 9.

Response to Arguments

5. Applicant's arguments, see amendment, filed 6/10/08, with respect to claims 2 and 9 have been fully considered and are persuasive. The rejection of claims 2 and 9 has been withdrawn. However, the arguments presented for claims 1 and 7 have been considered and are not persuasive. Applicant has amended claims 1 and 7 to further define the substrate. However, Applicant did not specify with respect to what the front surface is depressed. Therefore, Takumi does teach the front surface of the substrate having a depressed portion (the whole thing is depressed with respect to the wirings 4 of Figure 4). The front surface corresponds to the region of said back surface at which said charge-coupled device is disposed as a matter of physics. The substrate is a regular polygonal device, therefore the front and back surface correspond to each other.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any response to this Office Action should be faxed to (571) 273-8300 or mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-Delivered responses should be brought to:

Customer Service Window
Randolph Building

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401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAREN M. KUSUMAKAR whose telephone number is (571) 270-3520. The examiner can normally be reached on Mon - Thurs 7:30a - 5:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. M. K./
Examiner, Art Unit 2829
9/29/2008

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/Ha T. Nguyen/

Supervisory Patent Examiner, Art Unit 2829